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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHOW, CHARLES CHIANG	
ART UNIT	**PAPER NUMBER**
2618	

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/686,971	CORSE ET AL.	
	Examiner	Art Unit	
	Charles Chow	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5-6,8,10-15* is/are rejected.

7)☒ Claim(s) *2,4,7 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/16/2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in United Kingdom on 10/19/2002. It is noted, however, that applicant has not filed a certified copy of the United Kingdom 0224352.5 application as required by 35 U.S.C. 119(b).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the label for the arrow pointed to 428, 402, 430, respectively, in Figure 4 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

   Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

   Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

A> the specification fails to clearly describe the subject matter, "dual-port modulation". The closest description in applicant's specification are paragraphs [0007] to [0009] in view of Fig. 4, which is vague for the "dual-port modulator".

The claim examination for the "dual-port demodulation" is based on applicant's specification, paragraphs [0007] to [0009] together with the description from Khlat [US 2004/0090,909 A1, Motorola], the dual port modulation in Fig. 1, paragraph 0005, and the description from McConnell [US 5,515,013], the high frequency path, low frequency path [in Fig. 1, col. 2, line 34 to col. 3, line15].

B> the specification fails to clearly define the variables in claim 3, the N_{ch}, Δf_{devMax}, $V_{DACPeak}$.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The equation in claim 3 is defined in equation [21] of specification, but there is no clear definition for the variables N_{ch}, Δf_{devMax}, $V_{DACPeak}$.

The claim examination is based on the programmable channel number NCH 560 for N_{ch}, frequency deviation for Δf_{devMax}, D/A converter peak output voltage for $V_{DACPeak}$..

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claim 12, it is not positively reciting the claimed method steps.

The dependent claims 13-15 are also rejected due to their dependency upon rejected claim 12.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 5,983,077) in view of Fry (US 6,763,055 B1).

For claim 1, Dent teaches a wireless communication unit [a cellular telephone in Fig. 3, abstract] comprising

a dual-port modulator for generating a radio frequency signal to be used by the wireless communication unit [Fig. 2, col. 4, lines 56-62],

a data generator [DSP 104] operably coupled to the dual-port modulator [the operably coupled to the two port junction at loop filter 101, Fig. 2] for generating data to be

transmitted [the DSP 104 generates data to be transmitted from scaling the input MOD (A), for the open loop, closed loop, modulation, Fig. 2, col. 5, lines 9-38];

a digital to analogue converter [105] operably coupled to the data generator [DSP 104 generates data to D to A 105 from MOD(A) input, col. 5, lines 9-10 & col. 5, line 24-38] for converting the digital data to an analogue signal to be used in generating the radio frequency signal [the 105 in open loop modulation for the direct modulating to VCO channel frequency, to generate radio frequency, col. 4, line 66 to col. 5, line 8 & equivalent VCO 305 in Fig. 3 for transmitting radio frequency signal]; and

an attenuator [C0/α, αRo, the modulation sensitivity on VCO control line is scaled down by the factor α, col. 2, lines 13-29, Fig. 2] operably coupled to the digital to analogue converter [105] to attenuate the analogue signal output from the digital to analogue converter [to scale down the modulation sensitivity on the VCO control line, col. 2, lines 13-29];

Dent teaches a signal processor 104 coupled to the attenuator [C0/α, αRo, the scaled down modulation sensitivity on the VCO control line], but fails to teach the operably coupled to the attenuator for setting an attenuation value to balance signals input to two ports.

Fry teaches a wireless transceiver, communication unit [abstract] characterized by a signal processor operably [MPU] coupled to the attenuator [54, Fig. 8] for setting an attenuation value of the attenuator to balance signals input to two ports of said dual-port modulator [the MPU controls the attenuation to optimize, balance, the modulation depth of modulating input data, due to the modulation sensitivity varied with the transmit frequency, abstract, col. 4, lines 15-44], to order to obtain a better, optimal, modulation depth for the input data by avoiding the modulation index varying from the transmit frequency [col. 2, line 59 to col. 3, line 5]. Therefore, It would have been obvious to one of ordinary skill in the art

at the time the invention was made to upgrade Dent with Fry's MPU control attenuator, in order to obtain a better, optimal, modulation depth for the input data by avoiding the modulation index varying from the transmit frequency.

For claim 5, Dent teaches the wireless communication unit [cellular telephone], wherein the wireless communication unit is one of a portable or mobile (PMR) radio, a mobile phone, a personal digital assistant, a wireless capable laptop computer [a cellular telephone in Fig. 3, abstract].

6. Claims 6, 8, 12, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent in view of Fry, and further in view of Lind (US 4,704,585).

For claim 6, Dent teaches a method of tuning a dual-port modulator of a radio frequency signal in a wireless communication unit

[the automatic channel frequency deviation control of the dual port modulator in Fig. 2, abstract, utilizing scaling constant & the sampling at A to D 106 to processor 200, col. 5, lines 39-52; of a cellular radio telephone, Fig. 3, col. 4, line 27-31],

the method characterized by the following steps, generating a channel frequency; sampling the generated channel frequency; storing a sampled value of the generated channel frequency in an array [processor 200 programs VCO to a allocated channel using N value & A to D converter 106 samples VCO control level V; & records the array (N, V), or all possible channel's (N, V) pair at factory to store into an addressed array in EPROM or RAM; having channel spacing of 30KHz, 500 KHz, or 1 MHz, col. 6, lines 7-44; the sampling & storing of VCO control level V is equivalent to the sampling & storing of channel frequency due to the VCO output frequency is a direct function of VCO input tuning voltage];

repeating the steps of generating, sampling, storing, until selected channel frequencies have been sampled [the repeating, for first plurality of output channel frequencies, some, or all, of the plurality of out channel frequencies, to compute & update scaling constant, col. 3, lines 48-60];

controlling a signal level of a DAC digital to analogue converter output to balance signals input to two ports of said dual-port modulator [the processor 200 calculates the scaling constant based on measured N, V data, col. 6, lines 45-67, for controlling the output of D to A 105 output, col. 5, lines 24-37, due to the output frequency deviation caused by modulation, col. 5, lines 5, lines 39-42],

Dent fails to teach the calculating attenuation values.

Fry teaches the calculating attenuation values from the sampled values stored in the array(s) [step (h), retrieving voltage/frequency v/f transfer function; step (i) adjusting the attenuation in accordance with v/f function, col. 10, lines 45-62; via MPU's calculation, for providing control lines in step B in col. 10, lines 13-26; col. 4, lines 35-44], in order to optimize, correct, the modulation depth due to modulation input sensitivity varying with the transmit frequency [col. 4, lines 15-27]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Dent with Fry's MPU controlled attenuation of the modulating data, in order to correct the modulation depth.

Dent & Fry fail to teach the step of adjusting a channel frequency being sampled; the repeating the step of adjusting.

Lind teaches the adjusting a channel frequency being sampled, repeating the step of adjusting [the frequency counter 108, in Fig. 4, outputs sampled frequency difference; to modify VCO control voltage to reduce frequency difference in col. 8, lines 16-34; step (4) of col. 3, lines 55-67; the steps in Fig. 5; the modifying VCO control voltage is to adjusting a

channel frequency], to memorize corrected VCO control voltage for reducing transmitting frequency error [col. 6, lines 8-19]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Dent & Fry with Lind's stored corrected VCO control voltage, in order to reduce the transmitting frequency error.

For claims 8, 14, Fry combined with Dent, for Fry's teaching for the tuning a dual port modulator, a storage medium, wherein said steps of calculating and controlling are performed for particular frequency ranges of said wireless communication unit [the steps in (g) to (i), for calculating & adjusting/controlling of the attenuation in col. 10, lines 55-62 & col. 10, lines 1-5; for selected frequency range col. 10, lines 48-51].

For claim 12, Dent teaches a storage medium storing processor implemented instructions for controlling a processor [the processor 200 is obviously having a storage medium for storing computer readable instructions] to perform a method of tuning a dual-port modulator of a radio frequency signal in a wireless communication unit

[the automatic channel frequency deviation control of the dual port modulator in Fig. 2, abstract, the processor 200 executing instruction in storage, for controlling N+dN, Fig. 2, for accepting sampled data from A to D 106, to generate scaling, sent to DSP 104 for scaling Mod(A) input data for input to D to A 105, to control the frequency deviation via c0/a & aRo, col. 5, lines 25-52; of a cellular radio telephone, Fig. 3, col. 4, line 27-31],

the method comprising following steps; generate a channel frequency; sample the generated channel frequency; store a sampled value of the generated channel frequency in an array [processor 200 programs VCO to a allocated channel using N value & A to D converter 106 samples VCO control level V; & records the array (N, V), or all possible channel's (N, V) pair at factory to store into an addressed array in EPROM or RAM; having channel spacing of 30KHz, 500 KHz, or 1 MHz, col. 6, lines 7-44; the sampling & storing of

VCO control level V is equivalent to the sampling & storing of channel frequency due to the VCO output frequency is a direct function of VCO input tuning voltage];

repeat the steps of generating, sampling, storing, until selected channel frequencies have been sampled [the repeating, for first plurality of output channel frequencies, some, or all, of the plurality of out channel frequencies, to compute & update scaling constant, col. 3, lines 48-60];

control a signal level of a DAC digital to analogue converter output to balance signals input to two ports of said dual-port modulator [the processor 200 calculates the scaling constant based on measured N, V data, col. 6, lines 45-67, for controlling the output of D to A 105 output, col. 5, lines 24-37, due to the output frequency deviation caused by modulation, col. 5, lines 5, lines 39-42],

Dent fails to teach the calculate attenuation values.

Fry teaches the calculating attenuation values from the sampled values stored in the array(s) [step (h), retrieving voltage/frequency v/f transfer function; step (i) adjusting the attenuation in accordance with v/f function, col. 10, lines 45-62; via MPU's calculation, for providing control lines in step B in col. 10, lines 13-26; col. 4, lines 35-44], in order to optimize, correct, the modulation depth due to modulation input sensitivity varying with the transmit frequency [col. 4, lines 15-27]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Dent with Fry's MPU controlled attenuation of the modulating data, in order to correct the modulation depth.

Dent & Fry fail to teach the step of adjust a channel frequency being sampled; the repeating the step of adjusting.

Lind teaches the adjusting a channel frequency being sampled, repeating the step of adjusting [the frequency counter 108, in Fig. 4, outputs sampled frequency difference; to modify VCO control voltage to reduce frequency difference in col. 8, lines 16-34; step (4) of col. 3, lines 55-67; the steps in Fig. 5; the modifying VCO control voltage is to adjusting a channel frequency], to memorize corrected VCO control voltage for reducing transmitting frequency error [col. 6, lines 8-19]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Dent & Fry with Lind's stored corrected VCO control voltage, in order to reduce the transmitting frequency error.

[**Note**: It is suggested that "A storage medium" in line 1 of claim 12 & the "converter output" in second line before last line of claim 12, are to be changed to "A computer readable storage medium" & "converter output based on calculated attenuation values"].

7. Claim 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent in view of Fry, as applied to claim 1 above, and further in view of Miyagawa et al. (US 6,731,101 B2).

For claim 10. Miyagawa combined with Dent & Fry, for the Miyagawa's teachings of the wireless communication unit [radio communication apparatus, abstract, the dual port modulation to VCO 134, Fig. 3; for trim the DAC 132, col. 8, lines 54 to col. 9, line 3,Fig. 4, Fig. 8] capable of operating in the global system for mobile communications system [the portable telephone for prevailing GSM scheme in col. 13, line 20; col. 13, line 41-50], for conveniently operating in the prevailing GSM scheme. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Dent, Fry with Miyagawa's GSM scheme, in order to conveniently operating in a prevailing GSM system.

8. Claim 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent in view of Fry, Lind, as applied to claim 6 above, and further in view of Miyagawa-'101B2.

For claim 11, Miyagawa combined with Dent, Fry & Lind, for the Miyagawa's teachings of the tuning a dual port modulator [the dual port modulation to VCO 134, Fig. 3; for trim the DAC 132, col. 8, lines 54 to col. 9, line 3,Fig. 4, Fig. 8] capable of operating in the global system for mobile communications system [the portable telephone for prevailing GSM scheme in col. 13, line 20; col. 13, line 41-50], for conveniently operating in a prevailing GSM scheme, to combine with Dent's cellular dual port modulator with DAC in Fig. 2, Fry's wireless dual port modulator & Lind's radio frequency synthesizer, in order to operate in the prevailing GSM system.

Claims Objection

9. Claims 2, 4, 7, 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

For claim 2, Fry teaches the stored VCO voltage & frequency characteristic for MPU to adjust attenuation [steps in col. 10, lines 51-62], & Miyagawa teaches the stored DAC reference current in table 1 [col. 10, lines 19-41] for reducing frequency deviation [col. 8, lines 25-35, 143-144], Fry, Miyagawa, Dent & Other references in below, fail to teach the said signal processor storing one or more attenuation values, for the dual port modulator, for combining with the accurately attenuate said analogue signal level output from said digital to analogue converter.

For claims 4, 7 the cited reference from Dent, Fry, Miyagawa & other references in below, fail to teach the counteract any port mismatch dependent upon a determined phase error RMS difference between said ports; & the wherein the step of controlling is performed

to balance a phase error RMS imbalance between said two ports of said dual port modulator.

For claim 9, the cited references from Dent, Fry, Miyagawa & other references in below, fail to teach the claimed features for the delay before said step of sampling to compensate group delay between said two ports.

Other prior arts from Khlat (US 6,873,218 B2, later filing date), McDowell (US 6,674,331), McCune Jr. et al. (US 5,952,895), Nilsson (US 6,700,447), Black et al. (US 2004/0087,285), Koenck (US 5,912,926), Yoshikawa (US 2006/0052,073, later filing date), Humphreys (US 6,724,265 B2), Druck (US 4,313,209), Sofianos et al. (US 2004/0125,904 A1), Sai (US 4,942,374), Filiol et al. (US 6,515,553 B1) Hadjizada et al. (US 6,690,210 B2) are also considered but they fail to teach the objected features in claims 2, 4, 7, 9.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Rottinghaus (US 5,207,491), belongs to assignee Motorola, teaches the dual port modulator having frequency pre-steering 137 and frequency deviation control 141 [Fig. 1, abstract] for decreasing the gain of 129 to maintain the constant FM frequency deviation [col. 3, lines 55-68].

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the

organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Note: It is to notify that the art unit number has been changed to 2618.

Charles Chow C.C.

April 5, 2006.

EDWARD F. URBAN
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